

Red Deer River Hazard Study

The purpose of the Red Deer River Hazard Study is to assess and identify river and flood hazards along 51 km of the Red Deer River, 33 km of Waskasoo Creek, and 18 km of Piper Creek, through Red Deer, Lacombe County, and Red Deer County, including Penhold.

The river hazard study will be completed under the provincial Flood Hazard Identification Program, the goals of which include enhancement of public safety and reduction of future flood damages through the identification of river and flood hazards. The provincial study is being co-funded through the federal National Disaster Mitigation Program.

The study is complex, and the scope and scale of work is larger than previous provincial flood hazard studies. Hydraulic modelling, flood inundation mapping, and flood hazard mapping along the Red Deer River and Waskasoo and Piper Creeks are primary deliverables. The study also includes hydrology assessment, survey and base data collection, flood risk assessment and inventory, and channel stability investigation components.

The Red Deer River Hazard Study is expected to begin in fall 2017 and be complete by spring 2019. River survey work is expected to begin in late August and be complete by winter 2017.

We recognize there will be tremendous interest in any new flood mapping. Our study finalization process includes municipal review and public engagement for major components, as appropriate. Our goal is to provide useful tools to communities and the public as soon as possible.

More information about the Alberta Flood Hazard Identification Program can be found at:

- www.floodhazard.alberta.ca

If you have any questions regarding this work, the project engagement specialist, Ruth DeSantis, can be contacted at:

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Project Background

The Red Deer River Hazard Study will assess and identify river and flood hazards along 51 km of the Red Deer River, 33 km of Waskasoo Creek, and 18 km of Piper Creek, through Red Deer, Lacombe County, and Red Deer County, including Penhold.

The main study deliverables outlined below include a hydrology assessment, new hydraulic river models, updated and new flood inundation and flood hazard mapping, a flood risk inventory, and a channel stability assessment – all of which will be provided to each community within the study area to support their local emergency response and land-use planning needs.

- **Hydrology Assessment**

The hydrology assessment estimates flows for a wide range of possible floods along the Red Deer River and Waskasoo and Piper Creeks, including the 2, 5, 10, 20, 35, 50, 75, 100, 200, 350, 500, 750 and 1000-year floods. The analysis includes the 2013 flood.

- **Hydraulic River Modelling**

A new hydraulic computer model of the entire river system will be created using new survey data and modern tools. The models will be calibrated using surveyed highwater marks from past floods to ensure that results for different floods are reasonable.

- **Flood Inundation Mapping**

Flood maps for thirteen different sized floods, based on the hydraulic model results and the hydrology assessment, will be produced. Flood inundation maps can be used for emergency response planning and to inform local infrastructure design. These maps identify areas of potential isolated flooding and areas that could be flooded if local berms fail.

- **Flood Hazard Mapping**

Flood hazard mapping divides the 100-year floodplain into floodway and flood fringe zones, which show where flooding is deepest and most destructive. The flood hazard mapping will reflect the worst-case flood hazard of the open water and ice jam scenarios, if ice jam flooding is a significant concern. These maps can be used to help guide long-term development planning.

- **Flood Risk Assessment & Inventory**

An inventory of structures at risk of flooding for all of the mapped flood scenarios will be created. This flood risk assessment and inventory can support future flood damage assessments.

- **Channel Stability Investigation**

The main goal of this study component is to provide insight into general channel stability along the Red Deer River and Waskasoo and Piper Creeks. We will compare current and historic riverbank locations and channel cross sections as far back as 1949 using historic aerial photos.